

CABLE SPECIFICATIONS:

UTP Cable for T1 and E1	
Gauge	22 to 24 AWG
Impedance	100 ohms +/- 10%
Impedance Characteristic	2.6dB/100M @ 1Mhz
Maximum Distance	T1 6,000 ft E1 8,000 ft
Coax Cable for E1	
Gauge	22 to 24 AWG
Impedance	75 ohms +/- 10%
Impedance Characteristic	2dB/100M @ 1MHz
Maximum Distance	8,000 ft

3) VERIFY OPERATION

Once the module has been installed and configured per steps 1 and 2, verify the module is operational by viewing the LED indicators.

The Power LED indicates the module is receiving power.

The Fiber Optic link LED indicates the fiber optic connection has been established.

The UTP LED indicates a T1/E1 signal has been detected.

If the Fiber Optic LED is blinking, the port is receiving an all 1s signal. This will occur if the UTP port is not connected.

LED Function "Legend"	Color	OFF State	ON State
Power "Pwr"	Amber	No power	Module has power
Fiber Optics "F/O Lk"	Green	No Fiber Link	On: Fiber signal detected Blinking: All ones received
Test "Tst"	Green	Normal	On: Loop or All ones Test Mode Blinking: FOT Received - Local Fast Blinking: FOT Received - Remote
UTP "UTP Lk"	Green	No UTP Link	On: UTP signal detected Blinking: All ones received

iConverter® T1/E1 Plugin Module USER MANUAL

The *iConverter* T1/E1 media converter provides standard T1 (1.544Mbps) or E1 (2.048Mbps) copper to fiber conversion and can be used to extend the demarcation point between service provider and networking equipment. T1/E1 media converters operate in pairs, extending distances over fiber, which improves noise immunity, quality of service, intrusion protection and network security.

The T1/E1 supports Small Form Pluggable (SFP) transceivers, enabling adaptability to different fiber types, distances and wavelengths, providing maximum flexibility across a variety of network architectures and topologies.



INSTALLATION PROCEDURE

- 1) Configure DIP-Switches
- 2) Install Module in the Chassis and Connect Cables
- 3) Verify Operation

1) CONFIGURE DIP-SWITCHES

FRONT PANEL DIP-SWITCHES

SW1 - LOCAL DUAL LOOP-BACK "LOOP"

When this DIP-switch is set to the "Loop" position, it sets the *iConverter* T1/E1 converter to a dual loop-back mode (see Figure B) on both the fiber and copper connections. By returning the DIP-switch to the "Norm" position, the unit resumes normal operation.

SW2 - FIBER OPTIC TEST "FOT"

This DIP-switch will allow the entire fiber segment to be tested at either of the *iConverter* T1/E1 converters without having to set DIP-switches on both units. When this DIP-switch is set to "FOT", the local unit (the unit with the DIP-switch in the "FOT" position) is switched into local loop-back mode. In addition to the local loop-back mode of operation, the fiber TX port is further encoded to carry a remote loop-back protocol. This remote loop-back protocol sets the remote unit at the other end of the fiber link to a remote loop-back mode of operation and returns a signal to the local unit (see Figure C). A fast blinking "Tst" LED on the local unit and a slow blinking "Tst" LED on the remote unit shows confirmation that the fiber segment is communicating properly between devices. By returning the DIP-switch to the "Norm" position, the unit resumes normal operation.

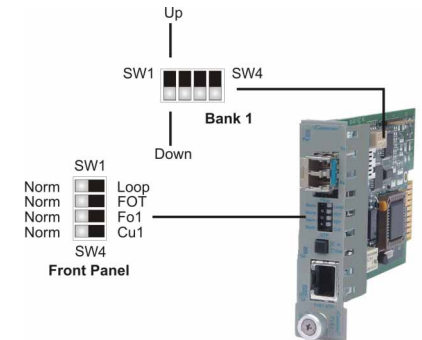


Figure A: DIP-Switch Location

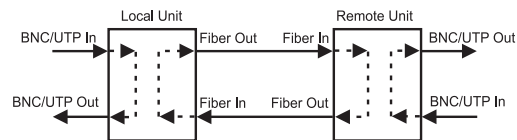


Figure B: Dual Loopback Mode

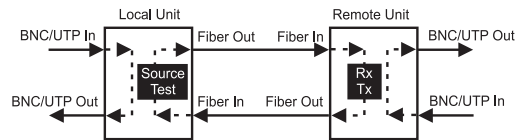


Figure C: Fiber Optic Test Mode

SW3 - FORCE 1S TO FIBER "FO1"

When this DIP-switch is set to the "FO1" position, an "all ones" pattern is inserted into the data stream being transmitted out of the fiber port on the T1/E1 converter. Data being received on the coax or twisted pair is disabled and data being received on the fiber is passed through to the coax or twisted pair side. A blinking "Tst" LED on the remote T1/E1 shows confirmation that the fiber segment is communicating properly between the devices. By returning the DIP-switch to the "Norm" position, the unit resumes normal operation.

SW4 - FORCE 1S TO COAX OR UTP "CU1"

When this DIP-switch is set to the "Cu1" position, an "all ones" pattern is inserted into the data stream being transmitted out of the coax or twisted pair port on the T1/E1 converter. Data being received on the fiber will be disabled and data being received on the coax or twisted pair is passed through to the fiber side. A blinking "Tst" LED on the remote T1/E1 shows confirmation that the Coax or UTP segment is communicating properly between the devices. By returning the DIP-switch to the "Norm" position, the unit resumes normal operation.

SW1 AND SW2 - AMI/B8ZS/HDB3 MODE

B8ZS (T1) or HDB3 (E1) is the default line encoding mode of operation. To select AMI mode, enable both the Local Dual Loop-back "Loop" and Fiber Optic Test "FOT" DIP-switches on the front of the module.

PUSH BUTTON - MANUAL CROSSOVER "= / X"

The Manual Crossover "= / X" button located on the front panel is used to eliminate the need for crossover and custom cables when connecting devices to the RJ-45/48 port. When the button is in the out "=" position, the port is configured for a straight-through cable. When the button is in the in "X" position, the port is configured for a crossover cable. The twisted pair connection requires two active pairs in a T1/E1 environment. The active pairs are pins 1 & 2 and pins 4 & 5. Only dedicated wire pairs should be used for the active pins.

DIP-SWITCH BANK 1

BOARD MOUNTED DIP-SWITCH SETTINGS:

T1/E1 Copper Line Configuration Settings:

The T1/E1 copper line codes and line lengths are configured using board mounted DIP-switches.

Line Type	Port Type	Distance	DIP-Switch Position			
			1	2	3	4
T1 DSX-1 (default)	RJ-45/48	0' to 133'	Down	Down	Down	Down
T1 DSX-1	RJ-45/48	133' to 266'	Down	Down	Down	Up
T1 DSX-1	RJ-45/48	266' to 399'	Down	Down	Up	Down
T1 DSX-1	RJ-45/48	399' to 533'	Down	Down	Up	Up
T1 DSX-1	RJ-45/48	533' to 655'	Down	Up	Down	Down
T1 DS1	RJ-45/48	0 dB	Down	Down	Down	Down
T1 DS1	RJ-45/48	-7.5 dB	Down	Up	Down	Up
T1 DS1	RJ-45/48	-15 dB	Down	Up	Up	Down
T1 DS1	RJ-45/48	-22.5 dB	Down	Up	Up	Up
E1 75 ohm	Coax/BNC	Standard	Up	Down	Down	Down
E1 120 ohm	RJ-45/48	Standard	Up	Down	Down	Up
E1 75 ohm	Coax/BNC	Extended	Up	Down	Up	Down
E1 120 ohm	RJ-45/48	Extended	Up	Down	Up	Up

2) INSTALL MODULE IN CHASSIS AND CONNECT CABLES

- Carefully slide the module into an open slot in the chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew (push in and turn clockwise to tighten) to the chassis front. Verify the "Pwr" LED is ON (indicating the chassis is powered).
- When using the SFP model (8719-0 or 8739-0), insert the SFP Fiber transceiver into the Port 1 SFP receptacle on the T1/E1 converter (see the SFP Data Sheet 091-17000-001 for supported transceivers).

NOTE: The release latch of the SFP Fiber transceiver must be in the closed (up) position before insertion.

- Connect to the RJ-45/48 connector on the *iConverter* T1/E1 converter via a Category 3 or better cable (Category 5 is recommended), and attach the other end to the network equipment.
- Connect an appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) media converter models operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.